

## REMARKS

Applicants respectfully request reconsideration and allowance of all pending claims.

### I. Amendments to the Specification

The Summary has been amended for purposes of clarification, Y being defined as a residue capable of initiating free radical polymerization upon homolytic cleavage of the Y-S bond. Applicants respectfully submit this amendment is supported by the Summary as originally filed (see, e.g., page 5, lines 13-14 and page 6, lines 11-12).

### II. Status of Pending Claims and Amendments Thereto

Prior to this Amendment C, claims 17-31 were pending. With this Amendment C, claims 17-19, 23, 27 and 29-31 have been amended, and claim 28 has been cancelled.

It is respectfully submitted that claims 17-19, 23, 27 and 29-31 have been amended in order to place these claims, as well as all claims depending therefrom, in conditions for allowance. More specifically, these claims have been amended for purposes of clarification and/or to ensure consistent terminology has been used throughout the claims. Additionally, with respect to the claim amendments, it is to be noted that:

- Claims 17-19 have also been amended to clarify that the structures provided therein are of the surface bound iniferter initiator, rather than the initiator-control agent adduct. Support for these amendments may be found, for example, on page 39, lines 8-9, of the present application, wherein the structure of claim 17, and thus of claims 18 and 19, is identified as a surface bound *initiator*. These amendments are further supported by claim 17 itself, wherein each C of the structure is defined as *a moiety on the surface of the substrate*.

- Claim 17 has further been amended to more generally define Y as a residue capable of initiating free radical polymerization upon homolytic cleavage of the Y-S bond. Support for this amendment may be found, for example, in claim 17 as originally filed (page 100, lines 1-2), in the Summary as originally filed (page 6, lines 11-12), and as further detailed below.<sup>1</sup>

Additionally, claim 17 has been amended to clarify that the monomer mixture referenced therein comprises a monomer that does, and a monomer that does not, have a functionalized site thereon for reaction with a probe selective for a biological molecule in an aqueous sample. Support for this amendment may be found, for example, on page 47, lines 13-23, wherein reference is made to the use of both functional group containing and non-functional group containing monomers to form surface bound polymer chains, in accordance with the present invention, in order to control the number of functional groups on the bound polymer chains.

### **III. Terminal Disclaimer**

Applicants respectfully acknowledge acceptance of the Terminal Disclaimer submitted on November 19, 2003.

### **IV. Claim 28**

Claim 28 has been canceled by this Amendment C, rendering moot the objection related thereto.

### **V. 35 U.S.C. §112, First Paragraph (Written Description)**

#### **A. *Cleavage of the Y-S Bond***

Reconsideration is respectfully requested of the rejection of claims 17-27 and 29-31 under 35 U.S.C. §112, first paragraph, based on the assertion that "UV initiated"

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<sup>1</sup> It is to be noted that on page 4, paragraph 7 of the Office action dated May 19, 2003, such language was clearly identified as supported by the Summary.

cleavage of the Y-S bond was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.<sup>2</sup>

In the interests of bringing prosecution of the present application to a close, and thus without commenting in detail on the present rejection, claim 17, from which claims 18-27 and 29-31 depend, has been amended to require "homolytic" cleavage of the Y-S bond. In view thereof, Applicants respectfully submit the present rejection is rendered moot, in as much as the Office has previously indicated "homolytic" cleavage is clearly supported by the present application (see page 4, paragraph 7 of the Office action dated May 19, 2003).<sup>3</sup>

*B. Monomer Mixture*

Reconsideration is respectfully requested of the rejection of claims 17-27 and 29-31 under 35 U.S.C. §112, first paragraph, based on the assertion that the phrase "at least one of said monomers does not have a functionalized site for reaction with said probe" was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claim 17, from which claims 18-27 and 29-31 depend, has been amended to remove the "at least one" language therein. The claim now requires that the monomer

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<sup>2</sup> It is noted that the Office's comments in reference to the phrases "capable of" and "reactions conditions to form bound polymer chains" were not mentioned in paragraph 7 of the Office action dated May 19, 2003. As a result, and given that these phrases appear to be an issue only in the context of the rejection based upon the phrase "UV initiated" cleavage, these phrases will not be specifically addressed herein.

<sup>3</sup> It is to be noted that Applicants reserve the right to challenge the present rejection at a later date if necessary, as they respectfully submit "UV initiated" cleavage of the Y-S bond is described in the specification in a manner sufficient to satisfy the written description requirement of 35 U.S.C. §112, first paragraph, in as much as one of ordinary skill in the art would recognize that (i) homolytic cleavage may be induced by light (i.e., UV), and (ii) an iniferter-related polymerization reaction, involving for example an alkyl dithiocarbamate (such as the one illustrated in Example 18), proceeds by photolysis (i.e., UV cleavage).

mixture comprises (i) a monomer that has one or more functionalized sites thereon for reaction with a probe selective for the biological molecule, and (ii) a monomer that does not have such a functionalized site. Applicants respectfully submit this language is supported by the text on page 47, lines 13-18, which clearly references the use of a mixture of functionalized and nonfunctionalized monomers.

In view of the foregoing, Applicants respectfully submit one of ordinary skill in the art, armed with the teachings of the present application, and the noted passage in particular, would clearly conclude that Applicants, at the time the application was filed, had possession of the claimed invention. As such, reconsideration of this rejection is respectfully requested.

*C. Monomer Ratios*

Reconsideration is requested of the rejection of claims 29-31 under 35 U.S.C. §112, first paragraph, which appears to be based on the assertion that the claimed monomer ratios were not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventors, at the time the application was filed, had possession of the claimed invention.

Each of claims 29-31 depend directly from claim 17 and more particularly claim certain embodiments of the monomer mixture referenced in claim 17. Specifically, each of claims 29-31 refer to a concentration range of the functionalized monomer in the monomer mixture, relative to the total mass of monomer in the mixture. The language of each of these claims, as well as claim 17 (as noted above), is present in the application as filed. In fact, the Office appears to acknowledge this in the present action on page 4 (first full paragraph). Accordingly, the Office appears to have rejected these claims simply on the basis that the phrase "polymerization system" does not appear therein.

Applicants respectfully submit the phrase "polymerization system" is unnecessary and need not be added to the claims. More specifically, in view of the teaching provided on, for example, page 36 (lines 20-24) of the present application, Applicants respectfully submit one of ordinary skill in the art would appreciate that "polymerization system," as used in the passage noted by the Office, refers to a system

that, in one embodiment, includes at least the desired monomers, the derivatized surface and the unbound initiators or initiator-control adducts under polymerization conditions, while in a second embodiment it refers to a system wherein no unbound initiators or initiator-control adducts are present. As such, to include this phrase in the present claims would be redundant, because it simply refers to elements already recited in claim 17.

In view of the foregoing, Applicants respectfully submit one of ordinary skill in the art, armed with the teachings of the present application, would appreciate that Applicants, at the time the application was filed, had possession of the invention as claimed. Applicants therefore respectfully request reconsideration of this rejection.

#### **VI. 35 U.S.C. §132 (New Matter)**

Applicants respectfully submit that the Office's rejection of Applicants' amendment to the specification in Amendment B (filed November 19, 2003), as adding new matter thereto, is rendered moot in view of the amendment to the specification made by this Amendment C.<sup>4</sup>

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<sup>4</sup> Without commenting in detail, it is to be noted that Applicants reserve the right to challenge the present rejection at a later date if necessary, in as much as they respectfully submit the phrase "UV initiated" is support by the present specification and, as such, is not new matter.

**CONCLUSION**

In view of the foregoing, favorable reconsideration and allowance of all pending claims is respectfully requested.

The Commissioner is hereby authorized to charge any underpayment or credit any overpayment to Deposit Account No. 19-1345.

Respectfully submitted,

A handwritten signature in black ink, reading "Derick E. Allen". The signature is written in a cursive, flowing style.

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